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(5350)

At
RSC

SHAWANO MUNICIPAL UTILITIES

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January 21, 2003

Ms. Lynda L. Dorr
Secretary to the Commission
Public Service Commission of Wisconsin
Post Office Box 7854
Madison, WI 53707-7854

127 D 2:29
PUBLIC SERVICE

RE: In the Matter of Filing Reporting Requirements for Appropriate
Inspection and
Maintenance, PSC Rule 113.0607(6)

Dear Ms. Dorr:

Enclosed for filing are 3 copies of Shawano Municipal Utilities' report to the
commission, submitted every two years, showing compliance with its Preventative
Maintenance Plan.

Very truly yours,

Andrew Onesti

Andrew Onesti
Electrical Engineer

Enclosures

Cc: Scot Cullen, PSC Chief Electric Engineer
Dan Dasho, SMU General Manager
SMU commission book

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JAN 27 2003

Electric Division

TWO YEAR REPORT DOCUMENTING COMPLIANCE WITH THE PREVENTATIVE MAINTENANCE PLAN

Shawano Municipal Utility

**FILING DEADLINE
FEBRUARY 1, 2003**

January 21, 2003

Andrew Onesti

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Electric Division

This report format was prepared by the MEUW work group for PSC Rule 113.0607 for use by the 82 municipal electric utilities in Wisconsin and endorsed by PSC staff as meeting the requirements of Rule PSC 113.0607.

I Reporting Requirements: PSC 113.0607(6) states;

Each utility shall provide a periodic report to the commission showing compliance with its Preventative Maintenance Plan. The report shall include a list of inspected circuits and facilities, the condition of facilities according to established rating criteria, schedules established and success at meeting the established schedules.

II Inspection Schedule and Methods:

SCHEDULE:	MONTHLY	ANNUAL	EVERY 5 YEARS
Transmission (69Kv)		X	X
Substations	X	X	
Distribution (OH & UG)			X

METHODS: Six criteria groups will be used to complete the inspection of all facilities.

1. IR – infrared thermography used to find poor electrical connections and/or oil flow problems in equipment.
2. RFI - Radio Frequency Interference, a byproduct of loose hardware and connections, is checked using an AM radio receiver.
3. SI – structural integrity of all supporting hardware including poles, crossarms, insulators, structures, bases, foundations, buildings, etc.
4. Clearance – refers to proper spacing of conductors from other objects, trees and conductors.
5. EC – equipment condition on non-structural components such as circuit breakers, transformers, regulators, reclosers, relays, batteries, capacitors, etc.
6. PD – partial discharge testing of insulated primary conductors.

Distribution facilities will be inspected by substation circuits on a 5 year cycle such that the entire system will be inspected every 5 years. Inspector instructions for inspecting all facilities and forms are included in the plan.

III Condition Rating Criteria

This criterion, as listed below, establishes the condition of a facility and also determines the repair schedule to correct deficiencies .

- 0) Good condition
- 1) Good condition but aging
- 2) Non-critical maintenance required – normally repair within 12 months
- 3) Priority maintenance required – normally repair within 90 days
- 4) Urgent maintenance required – report immediately to the utility and repair normally within 1 week

IV Corrective Action Schedule

The rating criteria as listed above determine the corrective action schedule.

V Record Keeping

All inspection forms and records will be retained for a minimum of 10 years. The inspection form contains all of the required critical information i.e. inspection dates, condition rating, schedule for repair and date of repair completion.

VI Reporting Requirements

A report and summary of this plan's progress will be submitted every two years with the first report due to the Commission by February 1, 2003. The report will consist of a cover letter documenting the percent of inspections achieved compared to the schedule and the percent of maintenance achieved within the scheduled time allowance.

VII Inspected Circuits and Facilities

Circuit # and description	Substation
Lincoln L121	Lincoln substation
Lincoln L123	Lincoln substation
Wescott W122	Wescott substation
Industrial I123	Industrial substation

Base load and peaking generation, less than 50 megawatts per unit in size, is typically subject to pre-operational checks, in addition to checks and maintenance during and after periods of operation. Emergency generation is test run and maintained every month to confirm its operational readiness.

VIII Scheduling Goals Established and Success of Meeting the Criteria:

“It was this utility’s goal to complete all monthly substation inspections, annual transmission line inspections and to inspect 20% of the distribution system. In addition, we expected to complete all scheduled maintenance resulting from the inspections within the prescribed time periods specified in the rating criteria.

All of the inspection goals were met or exceeded. Partial discharge testing of the underground primary cable in the south-east area of the city was performed to assess the remaining life of the cable. During the one week of testing over 33,000 feet of distribution cable was tested. Of the all the cable which was tested, there were 5 sections of primary cable which were

identified as bad. Of these 5, two sections have already been replaced with the remaining sections scheduled to be changed in the spring of 2004. Also, during the partial discharge testing, SMU crews inspected the distribution system. 1 urgent maintenance item (expanded primary elbow) was found and repaired within 7 days.

Infrared inspection of all substations and switch points on the distribution system is performed on an annual basis. The two maintenance items identified in the 2002 report have been repaired. Of the nine items identified in the 2001 report, 7 of the problems have been repaired with the two remaining items currently being scheduled for transformer change-outs. These last two items were not classified as critical problems as of yet.

Oil sampling of all of the electrical equipment at the SMU substations is also performed on an annual basis.

IX Facility condition – rating criteria:

“During the past two years, 20% of the distribution system was inspected and all substation inspections were completed on time. Of the items found requiring maintenance, all were repaired before they were responsible for an outage to customers. Storm related outages in 2002 were extensive with three separate storms during the year causing wide spread outages. The first storm was an ice storm during March of 2002 causing extensive outages throughout the overhead distribution system in the west area of the city. The second storm was a thunderstorm during July which knocked trees down into the overhead circuits in the west area of the city. The third storm was a snowstorm in October of 2002 when the trees in the area still had all of their leaves on, causing wide spread outages to the overhead distribution circuits. The underground distribution circuits were not affected during any of these storms. Otherwise electrical outages have been minimal and equipment failure only accounted for 1 outage affecting 5 industrial customers. Most of the system is just over 20 years old and is in excellent condition. The problem areas on the electrical distribution system are being targeted for conversion from overhead to underground to improve the reliability of the distribution system especially during storms. Finally, the assessment of the remaining life of the primary underground cable will continue to be performed using partial discharge testing with cables which are identified as having reached their end of useful life being replaced.